

Algebra 2 Midterm PRACTICE - Quarter 3 2012**Multiple Choice**

Identify the letter of the choice that best completes the statement or answers the question.

Simplify the given expression.

1. $(11x^2 + 7xy - 25y^2) - (8x^2 - 2xy)$
a. $3x^2 - 7xy - 23y^2$ b. $3x^2 + 5xy - 25y^2$ c. $3x^2 + 9xy - 25y^2$ d. $3x^2 - 9xy$
2. $60 \div 10 \cdot 2$
a. 10 b. 12 c. 3 d. 120
3. $\sqrt{16} + \{10 \div [11 - (5 + 1)]\}$
a. 5.43 b. 10 c. 6 d. 11
4. $\frac{-7 + \sqrt{7^2 - 4 \cdot 2 \cdot 3}}{2 \cdot 2}$
a. 4.5 b. -1 c. -0.5 d. -2
5. $-6r^4s - 10rs^2 - 4r^4s + 14 - 13rs^2$
a. $-19r^4s - 14rs^2 + 14$ c. $-10r^4s + 8rs^2 + 14$
b. $-10r^4s - 23rs^2 + 14$ d. $-10r^4s - 23rs^2$

Evaluate the function.

6. Find the value of $f(4)$ if $f(x) = -1x + 1$.
a. $f(4) = -8$ b. $f(4) = -3$ c. $f(4) = 0$ d. $f(4) = -5$

Find the slope.

7. $y = -\frac{1}{4}x - 8$
a. $-\frac{1}{4}$ b. -8 c. -1 d. 4
8. $x = -5$
a. -5 b. undefined c. 0 d. $-\frac{1}{5}$

9. $y = 3$

a. 0

b. undefined

c. 1

d. 3

10.

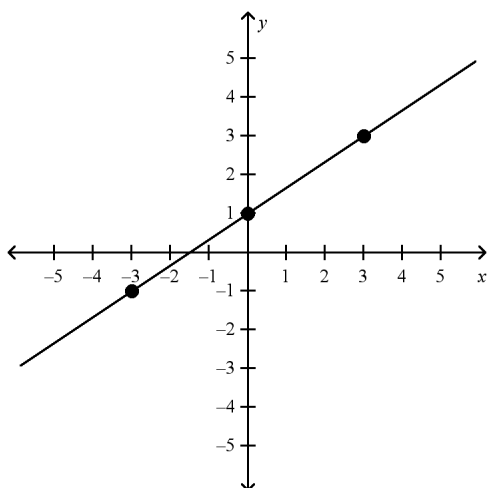
X	Y
-1	4
0	6
1	8

a. $\frac{1}{2}$

b. -2

c. 2

d. $-\frac{1}{2}$



11.

a. $\frac{3}{2}$

b. 1

c. $\frac{2}{3}$

d. $-\frac{2}{3}$

Solve the given formula for the specified variable.

12. $u = \frac{h}{t}$, for t

a. $t = \frac{h}{u}$

b. $t = h$

c. $t = \frac{u}{h}$

d. $t = uh$

13. $y = mx + b$ for m .

a. $m = y - b$

b. $m = \frac{y-b}{x}$

c. $m = \frac{x}{y-b}$

d. $m = \frac{y+b}{x}$

Write the equation of the line that satisfies the given conditions.

14. Goes through the points $(-2, 4)$ and $(0, 8)$

a. $y = 2x + 4$ b. $y = 2x + 8$ c. $y = -2x + 4$ d. $y = -2x + 8$

15. slope of 2, and passes through $(6, 30)$

a. $y = 2x + 18$ b. $y = 6x - 6$ c. $y = 2x - 30$ d. $y = 30x + 18$

Combine the functions as requested.

16. Find $(f+g)(x)$ for the following functions.

$$f(x) = 6x^2 + 8x + 8$$

$$g(x) = 1x + 6$$

a. $6x^2 + 9x + 8$ b. $6x^2 + 9x + 14$ c. $7x^3 + 14x + 8$ d. $7x^2 + 14x + 8$

17. Find $(f \cdot g)(x)$ for $f(x) = 2x^2 + 3x - 6$ and $g(x) = 4x$

a. $6x^3 + 7x^2 - 2x$ b. $8x^3 + 3x - 6$ c. $8x^3 + 12x^2 - 24x$ d. $8x^2 + 12x - 24$

18. Find $(f-g)(x)$ for the following functions.

$$f(x) = 15x + 17$$

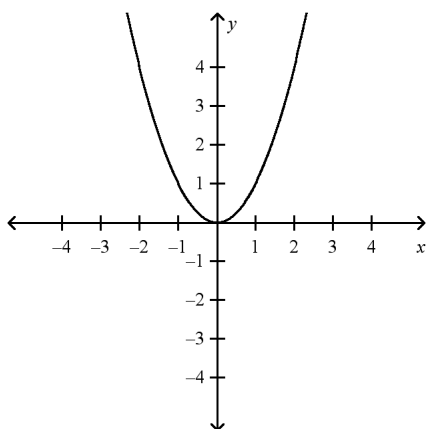
$$g(x) = -13x^2 + 7x + 33$$

a. $-13x^2 - 8x + 16$ c. $28x^2 - 7x - 16$
b. $13x^2 + 8x - 16$ d. $-13x^2 - 8x - 16$

State the function family that fits each situation.

19. $f(x) = x^3$

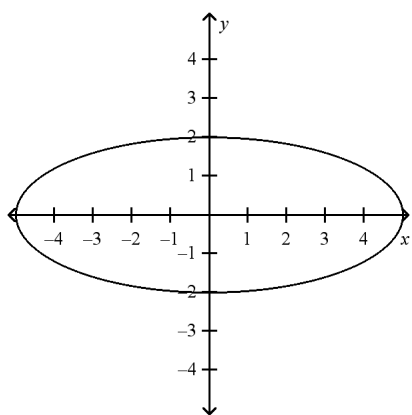
a. Quadratic b. Cubic c. Exponential d. Logarithmic



20.

- a. Exponential b. Quadratic c. Cubic d. Linear

Are the following relations a function?



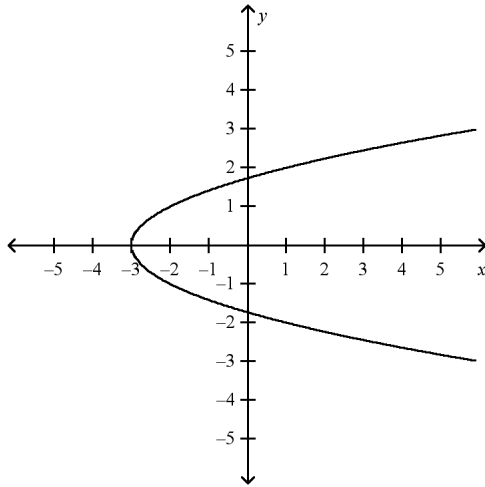
21.

- a. Yes, a function b. No, not a function

22. $\{(-1, 5), (-2, 3), (2, 7), (4, 3)\}$

- a. Yes, a function b. No, not a function

Give the domain and range of each function or relation.



23.

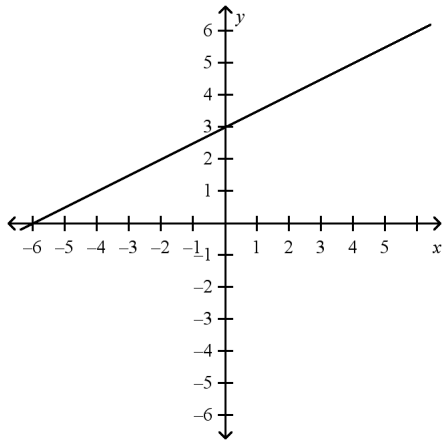
a. D: All real numbers
R: All real numbers

b. D: $[-3, \infty]$
R: All real numbers

c. D: All real numbers
R: $[-3, \infty]$

d. D: $[-3, \infty]$
R: $[-1.8, 1.8]$

Match the equation with the graph.



24.

a. $y = \frac{1}{2}x - 6$

b. $y = 2x + 3$

c. $y = \frac{1}{2}x + 3$

d. $y = -\frac{1}{2}x - 6$

Simplify.

25. $3\sqrt{20}$

a. $2\sqrt{5}$

b. $6\sqrt{5}$

c. $12\sqrt{5}$

d. $6\sqrt{10}$

Describe how each function is a transformation of the parent function $y=x$.

26. $y = -2x + 4$

- | | | | |
|---------------------------------------|--------------------------|-------------------------|---|
| a. reflected
steeper
shift up 4 | b. flatter
shift up 4 | c. reflected
steeper | d. reflected
flatter
shift down 4 |
|---------------------------------------|--------------------------|-------------------------|---|

Solve the given equation.

27. $27p - 21 = 46$

- | | | | |
|---------|---------|---------|---------|
| a. 2.48 | b. 0.93 | c. 1.26 | d. 3.19 |
|---------|---------|---------|---------|

28. $6.56p - 13 = 34 + 2.56p$

- | | | | |
|-------------------|---------------------|-------------------|---------------------|
| a. $\frac{47}{4}$ | b. $\frac{47}{1.3}$ | c. $\frac{4}{47}$ | d. $\frac{0.47}{4}$ |
|-------------------|---------------------|-------------------|---------------------|

29. $29 = -12(y + 4)$

- | | | | |
|----------|---------|-----------|----------|
| a. 13.00 | b. 2.47 | c. -77.00 | d. -6.42 |
|----------|---------|-----------|----------|

30. Find the value of $g(-5)$ if $g(x) = 2x^3 - 26x$.

- | | |
|-------------------|-------------------|
| a. $g(-5) = -120$ | c. $g(-5) = 3247$ |
| b. $g(-5) = 4$ | d. $g(-5) = -109$ |

The following carryout combinations are available at Mike's carryout joint.

One pizza, one coke, one bag of chips	\$5.50
One pizza, two cokes	\$6.50
Two pizzas, one bags of chips	\$6.00

31. Assume that the price of a combo meal is the same price as purchasing each item separately. Find the price of a pizza, a coke, and a bag of chips.

- | | |
|---|--|
| a. pizza: \$2, coke: \$2.50, chips: \$3 | c. pizza: \$2, coke: \$2, chips: \$1 |
| b. pizza: \$2, coke: \$3, chips: \$1 | d. pizza: \$2.5, coke: \$2, chips: \$1 |

32. Find $[g \circ h](x)$ and $[h \circ g](x)$.

$g(x) = 4x$

$h(x) = -10x - 12$

- | | |
|---|---|
| a. $[g \circ h](x) = -40x - 48$
$[h \circ g](x) = -40x - 12$ | c. $[g \circ h](x) = -40x - 48$
$[h \circ g](x) = -40x - 48$ |
| b. $[g \circ h](x) = -40x^2 - 48x$
$[h \circ g](x) = -40x^2 - 12x$ | d. $[g \circ h](x) = -40x + 48$
$[h \circ g](x) = -40x + 12$ |

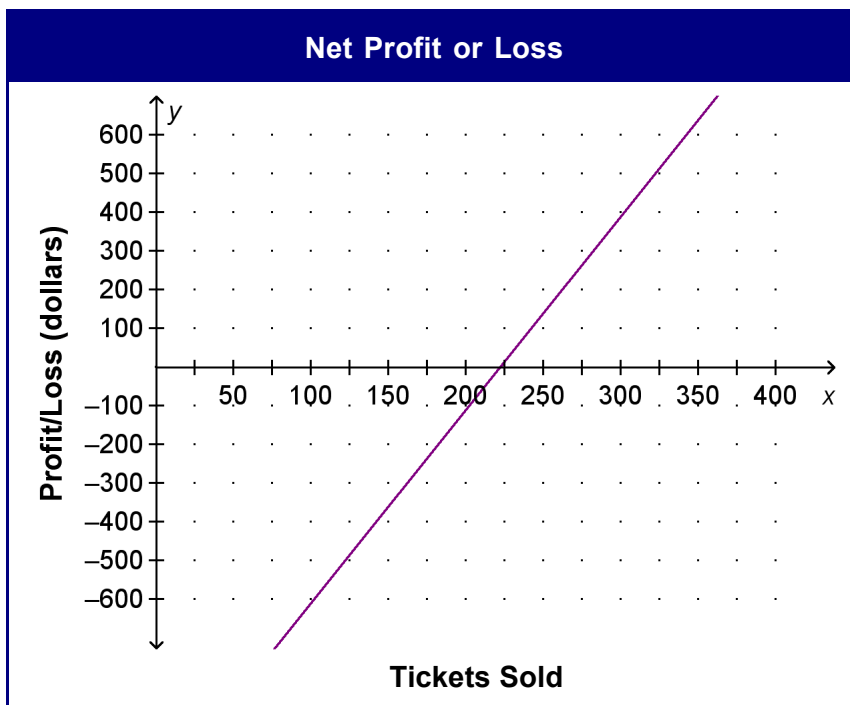
33. If a system of equations has 6 variables, then you need _____ equations to solve the system.
 a. 2 b. 3 c. 6 d. 5
34. Solve $3(8 - x) = -6x + 15$.
 a. -3 b. -1 c. 2 d. -2 e. 3
35. Three times 7 less than x equals 11 more than x . Which of these equations could you use to find x ?
 a. $x - 3 \cdot 7 = 11 + x$ d. $3(7 - x) = x + 11$
 b. $3 \cdot 7 - 3 \cdot x = x - 11$ e. $3(x - 7) = x + 11$
 c. $3 \cdot 7 - x = x + 11$
36. Find an equation in slope-intercept form of the line that has slope 2 and passes through point $A(-8, 7)$.
 a. $y = 23x + 2$ c. $y = 2x - 23$
 b. $y = -2x + 23$ d. $y = 2x + 23$
37. Simplify the following expression.
 $4(-x - 4y) + 2(-x + 3y) - 5(2x + 3y)$
 a. $-4x + 7y$ c. $16x + 37y$
 b. $-16x - 25y$ d. $4x + 5y$
38. A long-distance company offers four plans for long-distance telephone service. See the table below for a comparison of the plans. If a customer makes 82 minutes of long distance calls in a month, which plan will be the most expensive?
- | | Monthly Fee | Per Minute Charge |
|---------------|-------------|-------------------|
| Plan A | \$10.00 | \$0.11 |
| Plan B | \$0.00 | \$0.10 |
| Plan C | \$3.00 | \$0.07 |
| Plan D | \$3.00 | \$0.12 |
- a. Plan A c. Plan C
 b. Plan B d. Plan D
39. Edward's car holds 16 gallons of gasoline in the tank. When he drives on the highway, he uses about 1.9 gallons each hour. If Edward begins with a full tank of gas on a long highway trip to visit his brother, write an equation that can be used to calculate how much gas (g) is in the tank after h hours of driving.
 a. $g = (16 - 1.9)h$ c. $g = 16 - 1.9h$
 b. $g = 16h - 1.9$ d. $g = 16 + 1.9h$

40. A plumber charges a \$35 fee on all house calls plus an hourly rate for labor. If the total bill for a job that takes 4 hours is \$131, what is the plumber's hourly rate?
- \$32.75 per hour
 - \$96.00 per hour
 - \$24.00 per hour
 - \$3.74 per hour

41. A function is shown in the table below. Determine the rule for the function.

Input, x	Output, y
2	17
3	23
5	35
12	77

- $y = 6x + 5$
 - $y = 5x + 6$
 - $y = \frac{x}{6} + 5$
 - $y = 6(x + 5)$
42. A producer has fixed expenses of \$1,110 to put on a 3-day production of a play. Each ticket to the play will be sold for \$5.00. The line shows the net profit or loss of the producer based on selling x tickets. What is the minimum number of tickets the producer must sell over the 3-day period in order to earn a profit?



- 269 tickets
- 223 tickets
- 222 tickets
- 235 tickets

The linear function $h(t)$ shown below gives the height of a hang glider after it begins its descent to the ground.

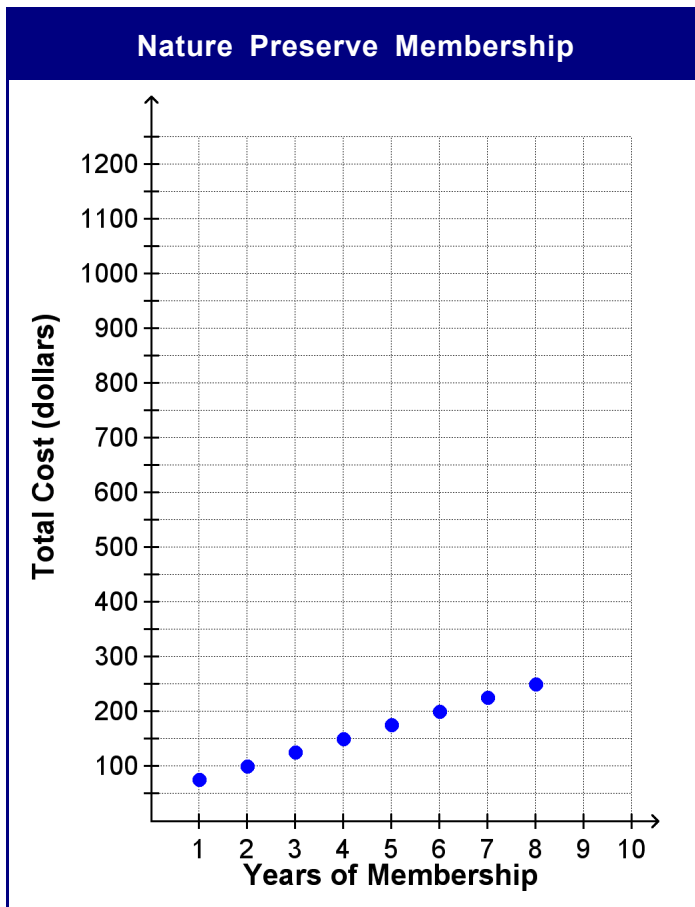


43. What is the domain and the range of the linear function shown above?
- | | |
|-----------------------------------|------------------------------------|
| a. Domain: $\{0 \leq t \leq 12\}$ | c. Domain: $\{0 \leq t \leq 600\}$ |
| Range: $\{0 \leq h(t) \leq 600\}$ | Range: $\{0 \leq h(t) \leq 600\}$ |
| b. Domain: $\{0 \leq t \leq 9\}$ | d. Domain: $\{0 \leq t \leq 600\}$ |
| Range: $\{0 \leq h(t) \leq 675\}$ | Range: $\{0 \leq h(t) \leq 12\}$ |
44. According to the linear function shown above, how long will it take for the hang glider to land?
- | | |
|----------------|----------------|
| a. 575 minutes | c. 600 minutes |
| b. 11 minutes | d. 12 minutes |

45.
$$\begin{bmatrix} * & * & * \\ * & * & * \\ * & * & * \\ * & * & * \\ * & * & * \end{bmatrix}$$
 is a _____ x _____ matrix.

- | | | | |
|----------|----------|----------|----------|
| a. 3 x 3 | b. 5 x 5 | c. 3 x 5 | d. 5 x 3 |
|----------|----------|----------|----------|

46. To become a member at a local nature preserve, applicants must pay an initiation fee of \$50 plus their yearly membership dues, as shown in the graph. What is the slope of the line joining these points, and what does the slope represent?



- a. The slope is 25. This represents the annual dues payment of \$25.
b. The slope is 50. This represents the annual dues payment of \$50.
c. The slope is 50. This represents the initiation fee of \$50.
d. The slope is 25. This means that memberships last 25 months.
47. At an archeological dig in ancient Mesopotamia, the distance around a triangular garden is calculated to be $\sqrt{44}$ meters. What is this distance expressed in simplest terms?
- a. $2\sqrt{11}$ meters c. $4\sqrt{11}$ meters
b. $121\sqrt{2}$ meters d. $11\sqrt{2}$ meters

Algebra 2 Midterm PRACTICE - Quarter 3 2012
Answer Section

MULTIPLE CHOICE

1. C
2. B
3. C
4. C
5. B
6. B
7. A
8. B
9. A
10. C
11. C
12. A
13. B
14. B
15. A
16. B
17. C
18. B
19. B
20. B
21. B
22. A
23. B
24. C
25. B
26. A
27. A
28. A
29. D
30. A
31. D
32. A
33. C
34. A
35. E
36. D
37. B
38. A
39. C
40. C

- 41. A
- 42. B
- 43. A
- 44. D
- 45. D
- 46. A
- 47. A